

# Severe Hypertension

## *What is severe hypertension?*

According to the American College of Obstetricians and Gynecologists (ACOG), hypertensive disorders of pregnancy (HDP) are a cause of morbidity and mortality of mothers and infants.<sup>1</sup> These disorders include chronic hypertension, gestational hypertension, preeclampsia, and preeclampsia superimposed on chronic hypertension.<sup>2</sup> Preeclampsia presents the major risk, either alone or superimposed on preexisting hypertension,<sup>1</sup> and is characterized as mild or severe based on the degree of hypertension and proteinuria, and the presence of symptoms resulting from involvement of the kidneys, brain, liver, and cardiovascular system.

## *Why is it important to measure severe hypertension?*

Poor maternal outcomes resulting from HDP can be improved through observation of women for signs and symptoms and delivery to terminate the disorder.<sup>1</sup> The decision to deliver involves balancing the risks of worsening preeclampsia against those of prematurity.<sup>2</sup> Optimal management of HDP requires close observation for signs and premonitory findings and, after establishing the diagnosis, delivery at the optimal time for both maternal and fetal well-being.<sup>1</sup> In the 1998-2006 period, a rising prevalence from 6.7% to 8.3% has been reported.<sup>3</sup> Recognition, classification, and adequate management of hypertensive pregnancy disorders and associated complications may considerably reduce perinatal death and morbidity.<sup>4</sup>

## *How is severe hypertension measured?*

The lead partner in Alliance for Innovation on Maternal Health (AIM) program is ACOG. This program has defined the metrics for severe maternal morbidity (SMM) among women with preeclampsia (with and without transfusion):

$$\text{SMM among Preeclampsia Cases} = \frac{\text{All SMM}}{\text{All Preeclampsia Cases}^a}$$

$$\text{SMM (excluding transfusion) among Preeclampsia Cases} = \frac{\text{All SMM}}{\text{All Preeclampsia Cases, except transfusions}^b}$$

<sup>a</sup>Excludes ectopic pregnancies and miscarriages. Includes severe preeclampsia, eclampsia, and preeclampsia superimposed on preexisting hypertension.

<sup>b</sup>Same as above, but excludes all transfusions from the denominator.

## *What are the limitations of measuring severe hypertension?*

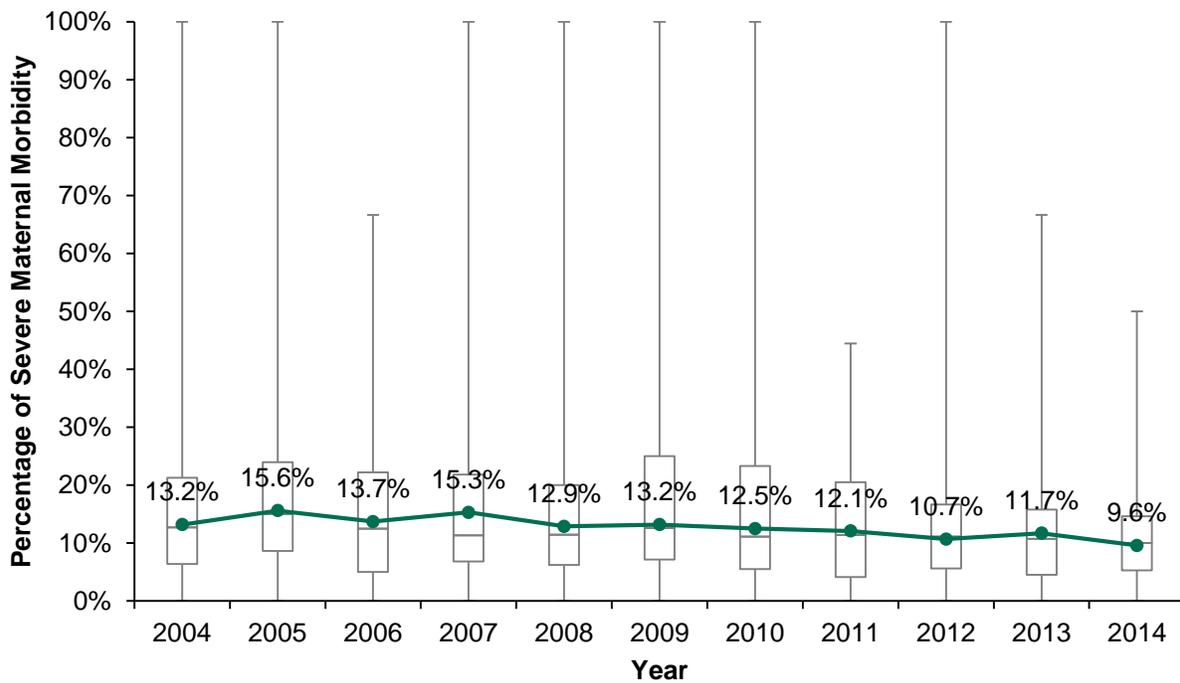
The severe hypertension measure was initially developed with ICD-9 codes. With the conversion to ICD-10, equivalent codes are pending their assessment for sensitivity and positive predictive value, as well as a proxy for the full assessment of obstetric hemorrhage severity. The source of data for severe hypertension estimates is the linked birth certificate and discharge records data set. Since the hospital discharge data set is primarily used for billing, it is also subject to errors of omission and commission by medical coders, as well as changes over time in coding practices. Limitations aside, standardizing a measure of severe hypertension has been on the research and quality improvement agendas of several organizations, which came together in the AIM program.

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### *How can we improve quality based on this indicator?*

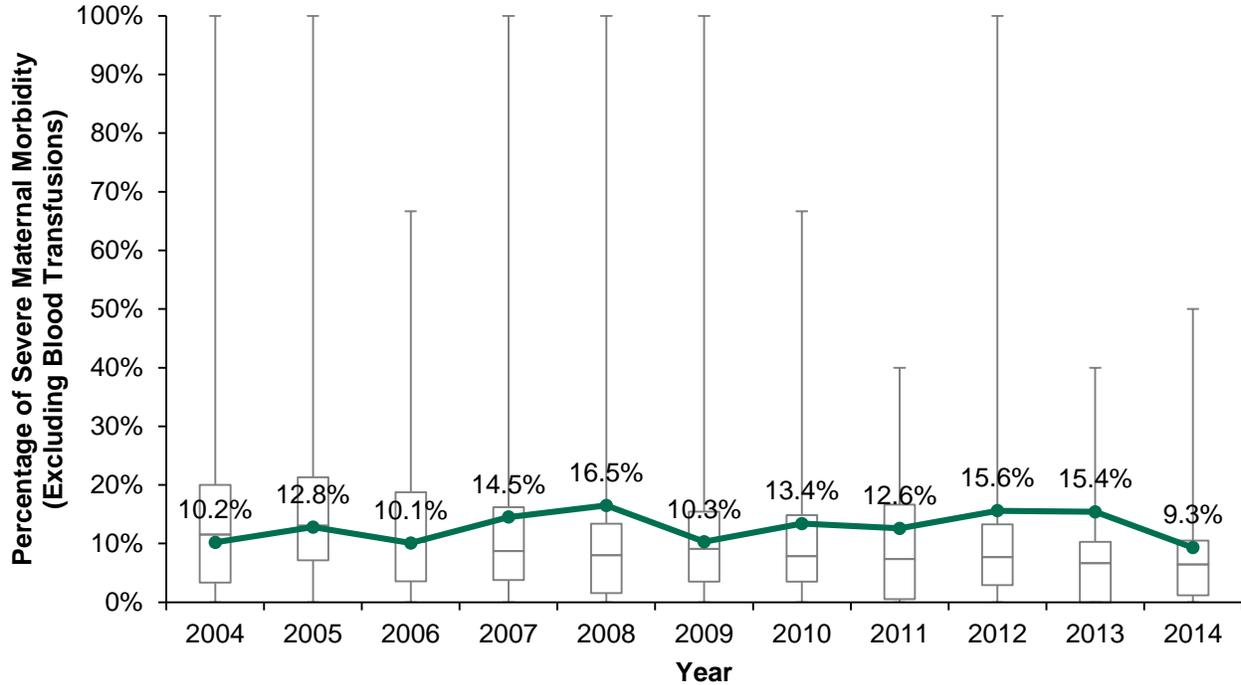
By monitoring trends and hospital values of HPD relative to other hospitals in the state, there will be continuous monitoring of outcomes. The California Maternal Quality Care Collaborative (CMQCC)<sup>6</sup> has improved outcomes by implementing staff education and correct BP measurement, notifying the physician if blood pressure is over 155/105 mmHg, standardizing treatment of blood pressure within one hour if it is over 160/110 mmHg, making a uniform policy for the use of MgSO<sub>4</sub> for severe preeclampsia and considering it in patients with preeclampsia, following-up early postpartum (3-14 days) if diagnosis of hypertension, and standardizing patient educational materials in English and Spanish.

**Figure 1. Percentage of severe maternal morbidity among women with severe hypertension/preeclampsia, Hospital X, Florida, 2004-2014.**

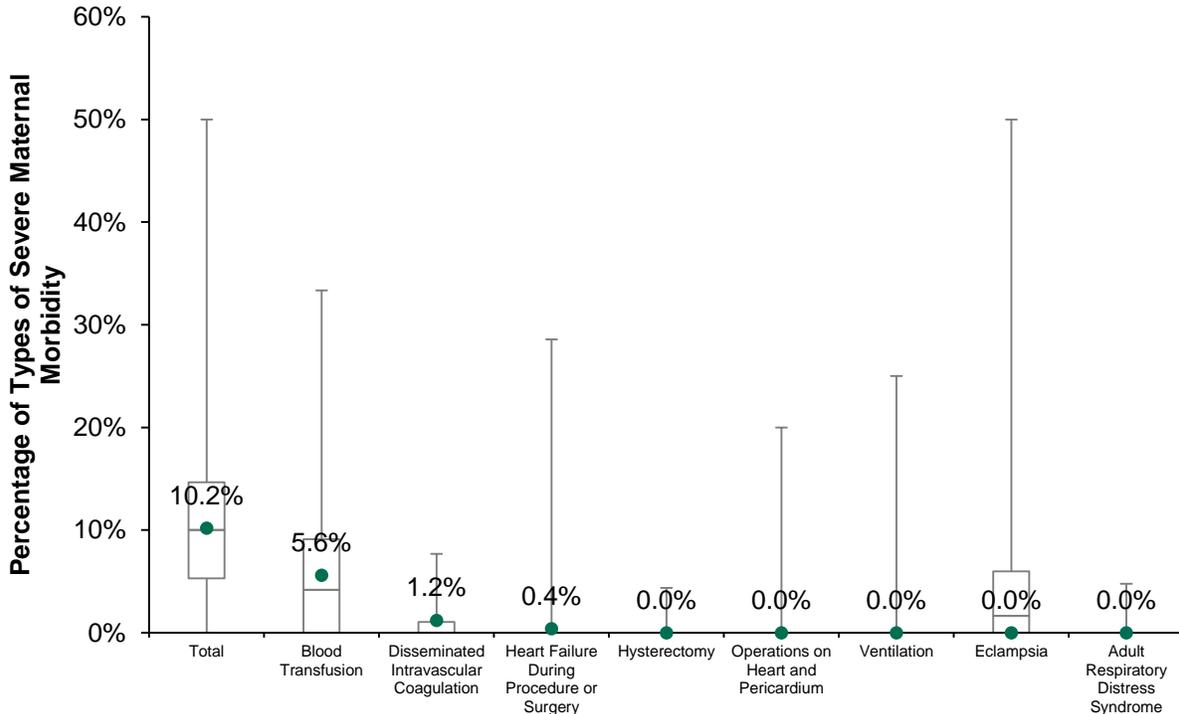


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**Figure 2.** Percentage of severe maternal morbidity among women with severe hypertension/preeclampsia (excluding women with blood transfusions), Hospital X, Florida, 2004-2014.



**Figure 3.** Percentage of types of severe maternal morbidity among women with severe hypertension/preeclampsia, Hospital X, Florida, 2014.



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### References

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